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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,511

03/02/2006

John Robert Owen

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EXAMINER

SALZMAN, KOURTNEY R

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/541,511	<b>Applicant(s)</b> OWEN ET AL.	
	<b>Examiner</b> KOURTNEY R. SALZMAN	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Summary*

1. This is the first action on the merits for application 10/541,511 filed March 2, 2006. This is the national stage application for PCT/GB04/00085, which claims priority to UK document 0300558.4.
2. Claims 1-6 are currently pending and have been fully considered.
3. The rejections are based on the claims as they were filed in a preliminary amendment filed with the application of July 8, 2005.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over NAGAI et al (JP Patent Number 6160344 abstract) in view of SULLIVAN et al (Analytical Chemistry, October 1999, 71(19), p. 4369-4375).

NAGAI et al teaches an electrochemical sensor with electrolyte and two electrodes, one of which (the counter electrode) with a tungsten oxide, or electrochromic material, as stated in the abstract. This sensor is for the detection and concentration determining of a gas through the absorption of gas molecules. The common detection is also shown in the accompanying figure.

NAGAI et al fails to teach a plurality of regions for testing the samples.

SULLIVAN et al teaches applying multiple electrodes onto one substrate so that the electrochemical response of each of the electrodes can be monitored in figure 1, the "Experimental Section" on p. 4370 and "Automated Direct Electrochemical Analysis" on p. 4373.

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At the time of the invention, it would have been obvious to one of ordinary skill in the art to apply multiple regions of testing, as in SULLIVAN et al, to the electrodes with tungsten oxide, as in NAGAI et al, because a combinatorial approach to electrode analysis allows a number of different samples, or aspects of the sample, can be tested more or less simultaneously, saving time. This is more relevant to NAGAI et al because multiple species of nitrogen oxide gas exist and multiple testing areas would allow for concurrent testing of these species.

Regarding claim 2, the material to be tested is not materially present in the sensor itself nor a part of the electrochemical cell. The limitations of this claim is regarding the intended use or method of use for the cell and therefore, does not carry patentable weight in the claim to an apparatus as that of the instant application.

Regarding claim 3, SULLIVAN et al teaches using a plurality of regions for testing as a way to save time and money. This addition of multiple regions is further discussed in the rejection of claim 1.

Regarding claim 4, just as multiple areas will be used for multiple electrode analyses, the electrolyte occupying the space below the electrodes would also be utilized for multiple testing regions through its electrical communication with the

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electrode on the opposite side of the electrode, As shown in the figure of NAGAI et al.

Regarding claim 5, tungsten oxide is identified to be present in the abstract of NAGAI et al and is well known in the art to behave as an electrochromic material.

8. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over WACHSMAN et al (US PG PUB 2003066519) in view of SULLIVAN et al (Analytical Chemistry, October 1999, 71(19), p. 4369-4375).

Regarding claims 1 and 5, WACHSMAN et al teaches an electrochemical sensor with an electrolyte and first and second electrode where the first electrode has a tungsten oxide layer in paragraphs 11-17 and in figure 1. The oxide layer is known in the art to be electrochromic.

WACHSMAN et al fails to teach a plurality of regions for testing the samples.

SULLIVAN et al teaches applying multiple electrodes onto one substrate so that the electrochemical response of each of the electrodes can be monitored in figure 1, the "Experimental Section" on p. 4370 and "Automated Direct Electrochemical Analysis" on p. 4373.

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At the time of the invention, it would have been obvious to one of ordinary skill in the art to apply multiple regions of testing, as in SULLIVAN et al, to the electrodes with tungsten oxide, as in WACHSMAN et al, because a combinatorial approach to electrode analysis allows a number of different samples, or aspects of the sample, can be tested more or less simultaneously, saving time. This is more relevant to WACHSMAN et al because already teaches the use of multiple electrodes as in figures 1B and 1C and identifies multiple species of nitrogen oxide gas to be of interest and multiple testing areas would allow for concurrent testing of these species.

Regarding claim 2, the material to be tested is not materially present in the sensor itself nor a part of the electrochemical cell. The limitations of this claim is regarding the intended use or method of use for the cell and therefore, does not carry patentable weight in the claim to an apparatus as that of the instant application.

Regarding claim 3, SULLIVAN et al teaches using a plurality of regions for testing as a way to save time and money. This addition of multiple regions is further discussed in the rejection of claim 1.

Regarding claim 4, WACHSMAN et al teaches multiple electrodes in figure 1B for the testing of multiple species simultaneously in different regions.

Regarding claim 5, tungsten oxide is identified to be present in the paragraph 19 of WACHSMAN et al and is well known in the art to behave as an electrochromic material.

Regarding claim 6, WACHSMAN et al teaches a reference electrode to be present in figure 1B as reference number 30.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over NAGAI et al (JP Patent Number 6160344 abstract) in view of SULLIVAN et al (Analytical Chemistry, October 1999, 71(19), p. 4369-4375) and in further view of WACHSMAN et al (US PG PUB 2003/0066519).

The combination of references NAGAI et al and SULLIVAN et al teach all the limitations of claim 1, but fail to teach the use of a reference electrode.

WACHSMAN et al teaches an electrochemical cell with a reference electrode in paragraph 75 and in figure 1B as reference number 30.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to include a reference electrode as in WACHSMAN et al in the sensor of NAGAI et al and SULLIVAN et al because as stated in paragraph 75 of WACHSMAN et al it will allow for an absolute voltage reading for the electrodes instead of relative values.



***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KOURTNEY R. SALZMAN whose telephone number is (571)270-5117. The examiner can normally be reached on Monday to Thursday 6:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nam X Nguyen/  
Supervisory Patent Examiner, Art Unit 1753

krs  
7/14/2009